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On deflectors of optimum shape

Maklakov D.

Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

In this paper the problem of the jet deflector of optimum shape has been solved. The deflector divides a jet that effuses from a semi-infinite channel of finite width. The goal of the investigation is to define the shape of the deflector that provides either its minimum wetted arclength under the given deflection angle or (which is equivalent) the deflection of the jet through the maximum angle under the given arclength of the deflector. An exact analytical solution of the problem has been found and it has been shown that the solution realizes a global extreme. A series of optimum deflectors is constructed for a variety of deflection angles and contraction jet coefficients. © 2005 Cambridge University Press.

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